



Roy F. Weston, Inc.
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MEMORANDUM

DATE: 4 November 1998

TO: David Bennett, WAM, U.S. EPA, Region X

FROM: Michelle Turner, Chemist, WESTON, Seattle
pm Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Polychlorinated Biphenyls (Aroclor) Data
Laboratory Batch: K9805457
Site: Duwamish River

WORK ASSIGNMENT NO: 46-23-0JZZ

WORK ORDER NO : 4000-019-038-5200-00

DOC. CONTROL NO.: 4000-019-038-AAAK

cc: Bruce Woods, RAP-WAM, U.S. EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of nine sediment samples, laboratory batch K9805457, collected from the Duwamish River has been completed. Samples were analyzed for polychlorinated biphenyls as Aroclors using EPA Method 8082 by Columbia Analytical Services of Kelso, Washington. The samples were numbered:

98334028	98334029	98334030	98334031	98334032
98334033	98334034	98334035	98334036	

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240.1-05, February 1994).

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98-0625H 003
DCN 4000-019-038-AAAK

4 November 1998
Region X





QA Review Batch K9805457 (PCB Aroclors)

Site: Duwamish River

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1. Timeliness

All samples met holding time criteria of 14 days for sample extraction and 40 additional days for extract analysis.

2. Initial Calibration

a) Mixed Aroclor 1016/1260 Standard

A six point initial calibration was performed. Calibration factors were calculated for a minimum of five peaks, none of which are common to both Aroclors. The calibration factor percent relative standard deviation (%RSD) was less than 20 percent for all peaks used for quantitation

b) Individual Aroclor Standards

Calibration factors were calculated from a mid-range standard for the other 5 Aroclors using 3 to 5 peaks

3 Calibration Verification

Aroclor 1016/1260 calibration verification standards were analyzed every 12 hours using a midrange standard. The calibration factor percent difference was less than 25 percent of the initial calibration value.

4. Retention Time Windows

Retention Time Windows were calculated from initial calibration. Retention times for calibration verification standards were within established windows.

5. Detection Limits

Instrument detection limits met project required quantitation limits.

6 Blanks

a) Laboratory Method Blanks

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QA Review Batch K9805457 (PCB Aroclors)

Site: Duwamish River

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Laboratory method blank frequency criteria were met

No target analytes were reported in laboratory method blanks.

b) Field Blanks

No field blanks were associated with this laboratory batch

7 System Monitoring Compounds (Surrogates)

Hexabromobiphenyl was used as the surrogate. Surrogate compound percent recovery met quality control criteria for all samples.

8. Matrix Spike and Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) percent recoveries met QC guidelines. All relative percent differences between the MS and MSD recoveries were within QC guidelines

9. Laboratory Control Sample (LCS) Analysis

LCS recovery goals for Aroclors were established in the project Sampling and Analysis Plan at 70 to 130% for sediment. Based on conversations with the laboratory, historical control chart limits of 26 – 142 for Aroclor 1016 and 40-139 for Aroclor 1260 were also used for data qualification.

All LCS percent recoveries met QC guidelines (P-project, L-laboratory) except for the following compounds:

Sample	Compound	Percent Recovery	QC Limits
KWG9802694-6 LCS	Aroclor 1016	66	70-130 (P) 26-142 (L)

Aroclor sample results in this SDG were qualified as estimated (J) when LCS recoveries were outside project limits, but within laboratory limits. Undetected results were also

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QA Review Batch K9805457 (PCB Aroclors)

Site Duwamish River

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qualified as estimated (UJ) when LCS recoveries were outside project limits, but within laboratory limits

10. Field Duplicate Analysis

No field duplicates were associated with this SDG

11. Second Column Confirmation

The percent difference in reported analyte concentration was greater than 35 percent for the primary and confirmation column for the following samples:

Sample Number	Compound	DB-5 Conc (µg/kg)	DB-608 Conc (µg/kg)	% Diff
98334028	Aroclor 1242	33.4	49.4	39
98334033	Aroclor 1254	79.3	120	41

Differences can arise from analytical interferences on one column. However, the percent differences are not deemed significant at the reported concentrations. The lower concentration was reported for each analyte.

12. Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. The case narrative indicates that the Aroclor 1260 RPD for the replicate analysis of sample 98334029 was outside the QC limit, possibly due to the heterogeneous nature of the sample. The RPD between the matrix spike and matrix spike duplicate for this sample met QC guidelines. No other unusual problems were noted.

13. Laboratory Contact

No laboratory contact was required.

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Site: Duwamish River

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Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

- U - The compound was analyzed for, but was not detected.
- UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.
- J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than CRDL or lowest calibration standard.
- R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.
- N - Presumptive evidence of presence of material (tentative identification)
- I - Elevated reporting limit due to matrix interference.

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805457
Date Collected: 8/12/98
Date Received: 8/13/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98334028
Lab Code K9805457-001
Test Notes.

Units ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	2003
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	33	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	142	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	96	

Approved By

Bonda Neuneker

Date

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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805457
Date Collected: 8/12/98
Date Received: 8/13/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98334029
Lab Code K9805457-002
Test Notes

Units ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	20 uJ
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	39	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	27	

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Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805457
Date Collected: 8/12/98
Date Received: 8/13/98

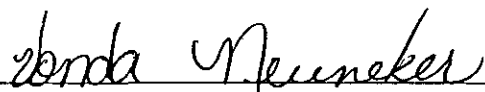
Polychlorinated Biphenyls (PCBs)

Sample Name 98334030
Lab Code K9805457-003
Test Notes

Units ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	2005
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	50	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	47	

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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805457
Date Collected: 8/12/98
Date Received: 8/13/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98334031
Lab Code K9805457-004
Test Notes

Units: ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	200J
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	92	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	96	

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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805457
Date Collected: 8/12/98
Date Received: 8/13/98

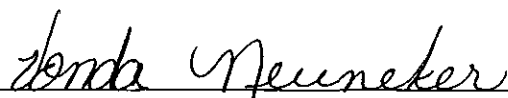
Polychlorinated Biphenyls (PCBs)

Sample Name 98334032
Lab Code K9805457-005
Test Notes:

Units: ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	20 ug
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	57	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	58	

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Sample Matrix: Sediment

Service Request: K9805457
Date Collected: 8/12/98
Date Received: 8/13/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98334033
Lab Code K9805457-006
Test Notes

Units ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	2045
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	79	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	102	

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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805457
Date Collected: 8/12/98
Date Received: 8/13/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98334034
Lab Code K9805457-007
Test Notes

Units ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	20 UJ
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	92	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	87	

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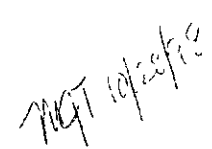
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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805457
Date Collected: 8/12/98
Date Received: 8/13/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98334035 Units: ug/Kg (ppb)
Lab Code K9805457-008 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	2005
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	87	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	80	

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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805457
Date Collected: 8/12/98
Date Received: 8/13/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98334036
Lab Code K9805457-009
Test Notes

Units ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	20uJ
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	82	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	75	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

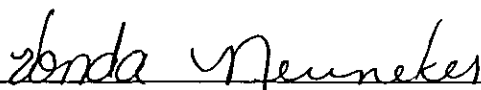
Service Request: K9805457
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name Method Blank **Units** ug/Kg (ppb)
Lab Code KWG9802694-8 **Basis** Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/20/98	8/27/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	8/20/98	8/27/98	ND	

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